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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,348	02/08/2002	Daniel R. Meacham	P04986	2784
7590	03/23/2005		EXAMINER COX, CASSANDRA F	
Docket Clerk P.O. Drawer 800889 Dallas, TX 75380			ART UNIT 2816	PAPER NUMBER

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/071,348

Applicant(s)

MEACHAM ET AL.

Examiner

Cassandra Cox

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

### **DETAILED ACTION**

1. Applicant's arguments with respect to claims 1-7 and 15-21 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7 and 15-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art figure 2 in view of Notani et al. (U.S. Patent No. 6,396,888).

In reference to claim 1, Applicant's admitted prior art figure 2 discloses a frequency discriminator for detecting phase shifts between sequential pulses in a frequency-shift keyed (FSK) signal having a nominal frequency, the frequency discriminator comprising: a peak-to-peak detector (205A) capable of receiving the FSK signal and limiting an amplitude of the FSK signal to produce a limited FSK signal; a first delay line (210A) capable of receiving an FSK signal (CKFPN) and delaying the FSK signal; a first multiplier (215A) capable of receiving and multiplying the FSK signal and the time-delayed FSK signal to thereby produce an output product signal proportional to a phase shift between the FSK signal and the time-delayed FSK signal. The prior art Figure 2 does not disclose that the delay line is a current controlled delay line receiving control from a delay locked loop. Notani discloses in Figure 18 a circuit having a first

current controlled delay line (7N; see column 20, lines 44-48 where Notani discloses that the delay lines may also be current controlled as called for in the claims) capable of receiving a signal (CKFPN) and delaying the signal by a desired time delay to thereby produce a time-delayed signal (DCKFPN); a first multiplier (OGN) and a delay locked loop comprising a second current controlled delay line (71) substantially similar to the first current controlled delay line (7N), wherein the delay locked loop receives a reference clock signal (CKFP1) having a time period equal to the desired time delay and adjusts a control current level in the second current controlled delay line (71) until a delay of the second current controlled delay line (71) matches the time period of the reference clock signal, wherein the control current level is then used to adjust a delay of the first current controlled delay line (7N). It would have been obvious to one skilled in the art at the time of the invention that the current controlled delay line (7N) and their means of control (delay locked loop (4, 5, 6, 71) of Notani could be used in place of the delay line of prior figure 2 to replace delay line (210A, 210B) for the advantage of ensuring that all of the delayed signals are in phase (see column 18, lines 51-54). The same applies to claims 15 and 22-23 wherein the limitations of claims 22 and 23 are seen to be met by the prior art Figure 2.

In reference to claim 2, Notani discloses in column 20, lines 44-48 that the second controlled delay line can be controlled by adjusting its bias current. The same applies to claims 3, 16, and 17.

In reference to claim 4, Notani discloses in Figure 18 that the delay locked loop comprises a phase detector (4) having a first input for receiving the reference clock

signal (CKFP1) and a second input for receiving an output signal (DCKFP1) of the second current controlled delay line (71) and generating a correction control signal (Vb) determined by a phase difference between the reference clock signal (CKFP1) and the output signal (DCKFP1) of the second current controlled delay line (71). The same applies to claim 18.

In reference to claim 5, Notani discloses in Figure 20 that the second current controlled delay line may also be configured as an oscillator (8). The same applies to claim 19.

In reference to claim 6, Applicant's admitted prior art figure 2 discloses a circuit further comprising: a third current controlled delay line (210B, which would be replaced by one of the delay lines of Notani as mentioned above with respect claim 1) capable of receiving an FSK signal and delaying the FSK signal to produce a time-delayed FSK signal; and a second multiplier (215B) capable of receiving and multiplying the FSK signal and the time-delayed FSK signal to thereby produce an output product signal proportional to a phase shift between the FSK signal and the time-delayed FSK signal; wherein the delay locked loop (4, 5, 6, 71) uses the control current level to adjust a delay of the third current controlled delay line (7(N-1) which would replace delay line 215B), see column 18, lines 25-30. The same applies to claims 7, 20, and 21.

4. Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art figure 2 in view of Notani et al. (U.S. Patent No. 6,396,888) and further in view of Bagby (U.S. Patent No. 5,319,679).

In reference to claim 8, Applicant's admitted prior art figure 2 in view of Notani discloses all the limitations of the claim as mentioned above with respect to claims 1 and 15, except they do not disclose demodulation circuitry capable of receiving an incoming radio frequency (RF) signal and generating therefrom a frequency-shift keyed (FSK) signal having a nominal frequency,  $f$ . Bagby discloses in Figure 1, demodulation circuitry (20, 21) capable of receiving an incoming radio frequency (RF) signal (14) and generating therefrom a frequency-shift keyed (FSK) signal (which is seen to be the output of block 21) having a nominal frequency,  $f$  (see column 3, lines 20-26 and 49-59). Since it is obvious that the signal being input into the prior art circuit would have to be generated in some method, any circuit capable of generating an FSK signal would be suitable to provide the signal input to the prior art circuit. Therefore, it would have been obvious to one skilled in the art at the time of the invention that the frequency shift keyed signal produced by Bagby could be provided as the FSK input signal.

In reference to claim 9, Notani discloses in column 20, lines 44-48 that the second controlled delay line can be controlled by adjusting its bias current. The same applies to claim 10.

In reference to claim 11, Notani discloses in Figure 18 that the delay locked loop comprises a phase detector (4) having a first input for receiving the reference clock signal (CKFP1) and a second input for receiving an output signal (DCKFP1) of the second current controlled delay line (71) and generating a correction control signal ( $V_b$ ) determined by a phase difference between the reference clock signal (CKFP1) and the output signal (DCKFP1) of the second current controlled delay line (71).

In reference to claim 12, Notani discloses in Figure 20 that the second current controlled delay line may also be configured as an oscillator (8).

In reference to claim 13, Applicant's admitted prior art figure 2 discloses a circuit further comprising: a third current controlled delay line (210B, which would be replaced by one of the delay lines of Notani as mentioned above with respect claim 1) capable of receiving an FSK signal and delaying the FSK signal to produce a time-delayed FSK signal; and a second multiplier (215B) capable of receiving and multiplying the FSK signal and the time-delayed FSK signal to thereby produce an output product signal proportional to a phase shift between the FSK signal and the time-delayed FSK signal; wherein the delay locked loop (4, 5, 6, 71) uses the control current level to adjust a delay of the third current controlled delay line (7(N-1) which would replace delay line 215B), see column 18, lines 25-30. The same applies to claim 14.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is 571-272-1741. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and on alternate Fridays from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

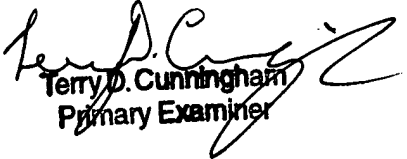
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

CC

CS

March 21, 2005

  
Terry D. Cunningham  
Primary Examiner